

REMARKS

Applicants appreciate the thorough and detailed examination of the present application that is reflected in the Official Action of November 18, 2003. However, notwithstanding the detailed Official Action, Applicants respectfully request reconsideration of the rejection of the pending claims as being obvious over U.S. Patent 6,097,995 to Tipton et al. A detailed claim analysis will be provided below. However, to summarize, Tipton et al. relates to hazardous materials and waste reduction management, whereas the present invention relates to chemical reaction management systems, methods and computer program products. As will be described in detail below, it would not be obvious to provide Applicants' *"Systems, Methods and Computer Program Products for Determining Parameters for Chemical Synthesis and for Supplying the Reagent, Equipment and/or Chemicals Synthesized Thereby"* (see the title of the present application), in view of Tipton et al.'s *"Hazardous Materials and Waste Reduction Management System"* (see Tipton et al.'s title). Accordingly, Applicants respectfully request withdrawal of the outstanding rejections and allowance of the present application.

For the convenience of the Examiner, the following remarks will track the sequence of issues raised on Pages 2-10 of the Detailed Action.

Response to Election/Restriction Requirement

In the June 16, 2003 phone conference with the Examiner, Applicants' representative elected the Invention I claims with traverse as indicated in the Official Action. To the extent that an Interview Summary is required for the oral election, the foregoing shall constitute an Interview Summary.

In response to the restriction requirement, Applicants hereby confirm the election of Invention I corresponding to Claims 1-11, 24-34, 44-54, 18-20, 41-43 and 61-63. Applicants assume that the inclusion of Claim 21 in the Invention I claim list is a typographical error in the Official Action. This election is being made without traverse, because Applicants agree that unpatentability of Invention I does not imply unpatentability of Invention II. Claims 12-17, 20-23, 35-40 and 55-60 have been canceled without prejudice to the filing of a divisional application.

Double Patenting

Claims 1-11, 24-34, 44-54, 18-20, 41-43 and 61-63 stand provisionally rejected under 35 USC §101 as claiming the same invention as that of Claims 1-11, 29-40, 54-65, 23-25, 51-53 and 76-78 of copending Application Serial No. 10/059,818. Applicants respectfully submit that this provisional double patenting rejection is overcome by the amendments of the claims in Application Serial No. 10/059,818.

The Pending Claims Are Patentable Over Tipton et al.

As noted above, the present application relates to "*Systems, Methods and Computer Program Products for Determining Parameters for Chemical Synthesis and for Supplying the Reagent, Equipment and/or Chemicals Synthesized Thereby*". See the title of the present application. As noted in the Background of the Invention section of the present application:

Chemicals are synthesized for various applications in commercial and academic environments. In chemical synthesis, a plurality of reagent chemicals are used to synthesize a target chemical, by reacting the reagent chemicals in predefined equipment according to a predefined procedure. The reagent chemicals, the target chemical, the equipment and the procedure provide the parameters for chemical synthesis.

More specifically, the pending claims relate to systems, methods and computer program products for "determining parameters for chemical synthesis" (Claims 1-11, 24-34 and 44-54), or systems, methods and/or computer program products for "obtaining materials for chemical synthesis" (Claims 18-20, 41-43 and 61-63). As defined in the present application in the section quoted above, chemical synthesis relates to chemical reactions. Moreover, as defined by Webster's Third New International Dictionary, 1986, a reaction is a "chemical transformation or change: the reversible or irreversible interaction of molecules, atoms, ions or radicals to form one or more new substances".

In sharp contrast, Tipton et al. relates to a "*Hazardous Materials and Waste Reduction Management System*", as noted in the Tipton et al. title. The Tipton et al. Abstract states:

A user controlled chemical management system for small-, medium- and large-sized organizations for use with a computer. The chemical inventory management system includes a chemical inventory control system allowing a user to manage chemicals from a central station, the plurality of combined receiving and outpost stations, to allow for the tracking of individual chemical containers throughout its life. In addition, an environmental, health and safety information system as contained in the chemical management system to allow the user create customized chemical storage groups that are color coded for a particular area. Also included is a safety equipment

management system to allow accurate records to be kept of all safety equipment. Finally, an international chemical compatibility system is included with a compliance/education design to create compliance/education files for any country in the world.

Respectfully, the Official Action appears to have selected brief passages from this extensive patent (116 sheets of drawings and 110 columns of text), and attempted to build the present invention from hindsight. Moreover, as will be described in detail below, many of the cited passages simply do not state what is being asserted in the Official Action. Finally, even those passages of Tipton et al. that relate to the management of mixtures of chemicals do not appear to describe reaction management systems, methods and computer program products as recited in the pending claims.

A detailed traversal of the rejection of pending Claims 1-11, 24-34, 44-54, 18-20, 41-43 and 61-63 now will be provided. For the convenience of the Examiner, this traversal will be presented in the order in which the claims were rejected in Paragraph 10, Pages 4-10 of the Official Action of November 18, 2003. Moreover, for the sake of brevity, only the method claims will be analyzed. However, analogous reasons apply equally to the system and computer program product claims.

Claims 1, 24 and 44 Are Patentable Over Tipton et al.

Claim 1 recites:

1. A computerized method of determining parameters for chemical synthesis comprising:
accepting a user identification of a target chemical; and
displaying a listing of reagent chemicals that are used to synthesize the target chemical, a listing of equipment that is used to synthesize the target chemical and a listing of a procedure that is used to synthesize the target chemical by reacting the reagent chemicals in the equipment according to the procedure, in response to the user identification of the target chemical. (Emphasis added.)

Accordingly, Claim 1 clearly recites to a method for reaction management which, in response to a user identification of a target chemical, displays a listing of reagent chemicals that are used to synthesize the target chemical, a listing of equipment that is used to synthesize the target chemical and a listing of the procedure that is used to synthesize the target chemical by reacting the reagent chemicals in the equipment according to the procedure.

In rejecting Claim 1, the Official Action cites Column 6, lines 60-65 of Tipton et al. as teaching displaying a listing of reagent chemicals. However, this passage states:

FIG. 38 is an example of an in-use inquiry window;
FIG. 39 is an example of a chemical type/vendor records window for a pure chemical;
FIG. 40 is an example of grade codes window;
FIG. 41 is an example of a description codes window;....

Moreover, Figure 38 of Tipton et al. is a listing of a single chemical "acetone" and a listing of all of the bottles of acetone at a site, locations of the bottles and amounts of the acetone in the bottles. Thus, Figure 38 provides an inventory management system for a chemical such as acetone, which describes all of the locations of the chemical in an organization. This is consistent with Tipton et al.'s desire to provide a user-controlled chemical management system for small-, medium- and large-sized organizations for use with a computer, as noted in the Tipton et al. Abstract.

The Official Action also cites Tipton et al. element **18** of Figure 1 as containing "a listing of equipment that is used to synthesize the target chemical". However, Figure 1 element Block **18** is a "safety equipment management system". As noted in Tipton et al. Column 61, lines 19-24:

Preferably, the system hereof includes the capability to manage safety equipment required when using chemicals. Examples of equipment that need to be controlled are fumes/exhaust systems, eyewash and safety showers, and various other equipment.

Thus, safety equipment such as eyewash and safety showers are described therein, not equipment that is used to synthesize a target chemical.

The Official Action also refers to Tipton et al.'s Figure 174 procedure list as listing "a procedure that is used to synthesize the target chemical". However, Figure 174 is a flowchart that describes software procedures that can build procedures for menu displays. See Tipton et al. Column 10, lines 52-53:

FIG. 174 is a flow chart for building a menu procedure list.

Also see Tipton Column 80, lines 59-63:

FIG. 174 sets forth the procedure for wRIGHTS__FUNC/471 which builds the menu procedure list. Step **2** sets the menu functions list as the current list and step **4** clears the current list. Step **6** then builds the list of all procedures for the menu stored in the format variable menu name.

Accordingly, Applicants respectfully submit that Tipton et al. does not describe or suggest "a listing of reagent chemicals that are used to synthesize the target chemical", "a listing of equipment that is used to synthesize the target chemical" or "a listing of a procedure that is used to synthesize the target chemical by reacting the reagent chemicals in the

equipment according to the procedure", as recited in Claim 1. In fact, the listing quoted by the Official Action is a listing of locations of chemicals within a factory, the listing of equipment is safety equipment such as goggles, and the listing of procedure is a software procedure for creating a menu. Claim 1 is unobvious over Tipton et al. for at least these reasons.

The Official Action appears to concede, at the top of Page 5 that "Tipton does not explicitly teach synthesis the target chemical." As noted above, however, Tipton et al. also fails to describe or suggest the listing of reagent chemicals, a listing of equipment and the listing of the procedure. However, in an attempt to supply the missing teachings, the Official Action cites Column 26, lines 39-50 of Tipton et al. This section of Tipton et al. relates to a "preset mix". As noted in Tipton et al. Column 26, lines 11-13:

The term "preset mix" is defined as a chemical container with components originating from a mixture of in-house chemicals.

Accordingly, this passage relates to "mixtures" of chemicals. A mixture is defined in Webster's Third New International Dictionary, 1986, as:

...a portion of matter consisting of two or more components that do not bear a fixed proportion to one another and that however thoroughly commingled are regarded as retaining a separate existence.

Thus, a mixture merely refers to percentages of materials that are mixed together, but are not reacted together. In contrast, as was noted above, a reaction is defined as:

...chemical transformation or change: the reversible or irreversible interaction of molecules, atoms, ions or radicals to form one or more new substances.

Bearing this in mind, Tipton et al. Column 26, lines 39-50 states how the constituent parts of mixtures are inventoried in Tipton et al.'s system:

This class of chemicals was included in the present system to meet the need of various entities to mix and maintain their own on-site mixtures that are used and prepared for repeated use by the particular entity. Academic laboratories mix chemicals for the students to identify, industrial and academic laboratories also constantly mix chemicals: to make reagents, to create mixtures for standardizing chemicals, for titration, for calorimetric determination, for calibrating instruments, to create buffers, to manipulate chemicals for various chemical reactions, for creating cleaning solutions, and to make dilutions of chemicals for various reasons.

However, this passage does not describe or suggest the elements of Claim 1 as was analyzed above.

The Examiner also referred to Figure 27 of Tipton et al. that describes these mixtures as constituting various constituent chemicals, but that are not reacted to create new

chemicals. Accordingly, the relationship between a mixture and its constituent parts are straightforward because no new chemicals are produced. Rather, the chemicals merely are mixed so that they all continue to exist in the mixture. Accordingly, although Tipton et al. can handle mixtures of chemicals in addition to individual chemicals in Tipton et al.'s hazardous materials and waste reduction management system, Tipton et al. does not describe or suggest reaction management methods as recited in Claim 1.

In this regard, Applicants wish to point out that, to establish a *prima facie* case of obviousness, three basic criteria must be met. The prior art reference (or references when combined) must teach or suggest *all* the claim limitations. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and there must be a reasonable expectation of success of the combination. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found *in the prior art*, not in applicant's disclosure. See MPEP § 2143. As recently affirmed by the Court of Appeals for the Federal Circuit, to support combining references in a §103 rejection, evidence of a suggestion, teaching, or motivation to combine must be *clear and particular*, and this requirement is not met by merely offering broad, conclusory statements about teachings of references. *In re Dembiczaik*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). In an even more recent decision, the Court of Appeals for the Federal Circuit has stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55, USPQ2d 1313, 1317 (Fed. Cir. 2000).

As described in detail above, the selected passages of Tipton et al. do not actually describe reagent chemicals, equipment that is used to synthesize a target chemical or a procedure for a chemical reaction. Moreover, since Tipton et al. is concerned with a chemical inventory management system, it would not be obvious to modify Tipton et al. to provide a reaction management system. Finally, even if so modified, based on the cited passages of Tipton et al., a system would be provided that provides a list of bottles and locations for chemicals or mixtures of chemicals, a listing of safety equipment and a software procedure for menus. Modification of Tipton et al. would not describe or suggest:

displaying a listing of reagent chemicals that are used to synthesize the target chemical, a listing of equipment that is used to synthesize the target chemical and a listing of a procedure that is used to synthesize the target chemical by reacting the reagent chemicals in the equipment according to the procedure, in response to the user identification of the target chemical,

as recited in Claim 1. Accordingly, Applicants respectfully request withdrawal of the outstanding rejection of Claims 1, 24 and 44, and of the dependent claims that depend therefrom.

Claims 2, 25 and 45 Are Independently Patentable

Claim 2 recites:

2. A method according to Claim 1 further comprising:
accepting user input to order the target chemical, the reagent chemicals that are used to synthesize the target chemical and/or the equipment that is used to synthesize the target chemical; and
electronically ordering the target chemical, the reagent chemicals that are used to synthesize the target chemical and/or the equipment that is used to synthesize the target chemical, in response to the user input to order the target chemical, the reagent chemicals that are used to synthesize the target chemical and/or the equipment that is used to synthesize the target chemical.

In rejecting Claim 2, the Official Action cites Tipton et al. Column 40, lines 43-67.

However, this section states:

This is accomplished by the user creating a select statement through the use of pull-down lists (2610 and 2612 of FIG. 26) and entry field (2614 of FIG. 26), executing a search by pressing the "Build List" button (2616 of FIG. 26), and finally choosing the correct main chemical record from the resultant list (2618 of FIG. 26).

ii. Multiple Consumption Process

When adding a main chemical to a multiple consumption process (MCP), a user needs to tell the system what type of chemical is being added to the process. This is accomplished by the user creating a select statement through the use of pull-down lists, (7906 and 7908 of FIG. 79) and entry field (7910 of FIG. 79), executing a search by pressing the "Build List" button (7912 of FIG. 79), and finally choosing the correct main chemical record from the resultant list (7914 of FIG. 79).

iii. SQL Searcher

The SQL searcher provides a user with a complete SQL interface to various files within the system. The user can create select statements as described above to select a list of main chemicals quickly. By double-clicking on the resultant list the user can go to the main inquiry screen for that chemical. This enables the user to find what they are looking for quickly without browsing through the inquiry screen for every chemical.

With all due respect, this passage simply does not state anything about electronically ordering the chemicals and/or equipment, but, rather, describes how to identify a location of a chemical in a factory. Accordingly, Claims 2, 25 and 45 are independently patentable.

Claims 3, 26 and 36 Are Independently Patentable

Claim 3 recites:

3. A method according to Claim 1 wherein the accepting a user identification of a target chemical is preceded by:
entering into a database, a plurality of target chemicals, a plurality of corresponding listings of reagent chemicals that are used to synthesize the plurality of target chemicals, a plurality of corresponding listings of equipment that is used to synthesize the plurality of target chemicals and a plurality of corresponding listings of procedures that are used to synthesize the plurality of target chemicals by reacting the corresponding reagent chemicals in the corresponding equipment according to the corresponding procedure.

In rejecting Claim 3, the Official Action cites Tipton et al. Column 25, lines 20-30.

However, this passage states:

The unique inventory classification design structure of the present system allows for simple and easy classification of any given chemical in an organization. The inventory classification design structure of the present system divides the chemical inventory of an organization into three primary groups of chemical containers. The inventory design structure is shown in FIG. 24A and divides containers 2400 into one of the three groups of in-use 2402, surplus 2404, and waste 2406.

This passage appears to be totally unrelated to the claimed entering into a database of target chemicals, reagent chemicals, equipment and reaction procedures, as recited in Claim 3.

Accordingly, these claims are independently patentable.

Claims 4, 27 and 47 Are Independently Patentable

These claims contain the same recitations as Claim 2 and are, therefore, patentable for the same reasons that were described above. This analysis will not be repeated for the sake of brevity.

Claims 5, 28 and 48, and 6, 29 and 49 Are Independently Patentable

These claims are patentable at least per the patentability of the independent claims from which they depend.

Claims 7, 30 and 50 Are Independently Patentable

Claim 7 recites:

7. A method according to Claim 1 wherein the accepting a user identification of a target chemical comprises:
 - accepting a user identification of a reaction type;
 - displaying a listing of target chemicals that are synthesized using the reaction type; and
 - accepting a user selection of a target chemical from the listing of target chemicals that are synthesized using the reaction type.

Accordingly, Claim 7 recites searching by reaction type. The Official Action cites Tipton et al. Column 40, line 63-Column 41, line 9. However, this passage states:

By double-clicking on the resultant list the user can go to the main inquiry screen for that chemical. This enables the user to find what they are looking for quickly without browsing through the inquiry screen for every chemical. For example, a user is looking for a particular chemical, to use in a lab, which contains the necessary element copper. The user can use the SQL Searcher (10902 of FIG. 109) to build a query such as "Select main chemical records where molecular formula contains "Cu". Once the query is performed, the user is presented with a list of matches (10904 of FIG. 109) and can choose the chemical that most closely matches the criteria. Double clicking on this line will cause the inquiry screen to be shown and that chemical's record to be automatically found. The user can then find a container of the chemical to use.

With all due respect, this passage does not contain any description or suggestion of searching by reaction type. This is not surprising, since Tipton et al. does not relate to chemical reactions at all. For at least these reasons, Claims 7, 30 and 50 are independently patentable.

Claims 8, 31 and 51 Are Independently Patentable

Claim 8 recites:

8. A method according to Claim 1 wherein the following is performed between the accepting and the displaying:
 - displaying a listing of procedures that can be used to synthesize the target chemical; and
 - accepting a user selection of a procedure from the listing of procedures that can be used to synthesize the target chemical.

Accordingly, Claim 8 relates to searching by procedures. In rejecting Claim 8, the Official Action cited the same passage that was quoted above with respect to Claim 7. However, this passage does not contain any description of searching based on procedures. This is not surprising, since Tipton et al. does not relate to reaction management systems, but, rather, relates to chemical inventory management systems.

Claims 9, 32 and 52 Are Independently Patentable

Claim 9 recites:

9. A method according to Claim 1 wherein the following is performed between the accepting and the displaying:

accepting a user selection of a desired quantity of the target chemical; and scaling the listing of the reagent chemicals so as to synthesize the desired quantity of the target chemical; and

wherein the displaying comprises:

displaying a scaled listing of the reagent chemicals that are used to synthesize the desired quantity of the target chemical, a listing of equipment that is used to synthesize the desired quantity of the target chemical and a listing of a procedure that is used to synthesize the desired quantity of the target chemical by reacting the reagent chemicals in the equipment according to the procedure, in response to the user identification of the target chemical and the user selection of the desired quantity of the target chemical.

Accordingly, this claim relates to scaling the reagent chemicals and the listing of equipment in response to user selection of the desired quantity of the target chemical. In rejecting these claims, the Official Action cites the same passages that were used to reject Claims 7 and 8. However, these passages contain no description or suggestion on scaling. This is not surprising, because, in an inventory management system, scaling would not appear to be a relevant concept.

Claims 10, 38 and 63 Are Independently Patentable

Claim 10 recites:

10. A method according to Claim 1 wherein the accepting a user identification of a target chemical comprises:

displaying a prioritized listing of target chemicals that match the user query; and

accepting a user selection of a target chemical from the prioritized listing of target chemicals that match the user query.

As noted in the present application, for example at Page 19, lines 5-13:

When multiple results are found, a prioritized listing may be displayed, so that more likely desired results are displayed at the top of the listing. In particular, in response to a user input in field 1810 of Figure 18, the name, other_names and info attributes of the chemical database 216a may be searched. The results may be displayed in a priority sequence as follows: exact matches in the name attribute; exact matches in the other_names attribute; partial matches in the name attribute; and, finally, partial matches in the other_names attribute. By prioritizing the display of

results, the more likely user selections may be displayed at the top of the list in Figure 19.

In rejecting Claims 10, 38 and 63, the Official Action cites the same passages that were used in rejecting in Claims 7, 8 and 9. These passages clearly do not describe a prioritized listing of chemicals. Accordingly, these claims are independently patentable.

Claims 11, 39 and 64 Are Independently Patentable

Claim 11 recites:

11. A method according to Claim 1 wherein the accepting a user identification of a target chemical comprises:
accepting user identification of a chemical;
displaying a listing of procedures that use the chemical as a reagent chemical;
and
accepting a user selection of a procedure from the listing of procedures that use the chemical as a reagent chemical.

In rejecting Claim 11, the Examiner cites the same passages of the Tipton et al. patent that were used with respect to Claims 7, 8, 9 and 10. However, these passages do not describe or suggest searching by procedures, as recited in Claim 11. Accordingly, these claims are separately patentable.

Claims 18, 41 and 61 Are Patentable Over Tipton et al.

Claim 18 recites:

18. A computerized method of obtaining materials for chemical synthesis comprising:
electronically ordering a target chemical, reagent chemicals that are used to synthesize the target chemical and/or equipment that is used to synthesize the target chemical, from an electronically displayed listing of the reagent chemicals that are used to synthesize the target chemical, of the equipment that is used to synthesize the target chemical and of a procedure that is used to synthesize the target chemical by reacting the reagent chemicals in the equipment according to the procedure, in response to user input to order the target chemical, the reagent chemicals that are used to synthesize the target chemical and/or the equipment that is used to synthesize the target chemical.

Thus, Claims 18, 41 and 61 recite the electronically ordering of Claim 2 in independent form. As was already noted in connection with Claim 2, Tipton et al. does not describe any form of electronic ordering. Moreover, Tipton et al. does not describe or suggest reagent chemicals, target chemicals, chemical reactions or equipment for chemical reactions, as was described

extensively above. For at least these reasons, Claims 18, 41 and 61 are patentable over Tipton et al.

Claims 19, 42 and 62 Are Independently Patentable

Claim 19 recites:

19. A method according to Claim 18 wherein the electronically ordering comprises:
electronically ordering a kit of the reagent chemicals that are used to synthesize the target chemical.

In rejecting these claims, the Official Action cites Tipton et al. Column 26, lines 29-53. However, as was already described, this passage relates to the inventory control of components of a preset mixture, and does not describe or suggest kits of reagent chemicals that are used in chemical synthesis. Accordingly, these claims are independently patentable.

Claims 20, 43 and 63 Are Independently Patentable

Claim 20 recites:

20. A method according to Claim 18 wherein the electronically ordering comprises:
electronically ordering a kit of the equipment that is used to synthesize the target chemical.

The Official Action cites the same passage that was cited in rejecting Claim 18. However, this passage does not contain any description or suggestion of ordering of a kit of equipment that is used to synthesize the target chemical, because synthesis is simply not described or suggested in Tipton et al. Accordingly, these claims are independently patentable.

Applicants Request Consideration of the Supplemental Information Disclosure

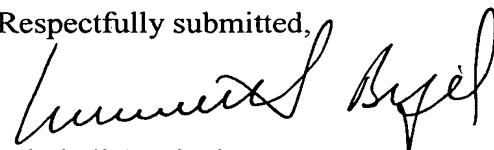
Statement

In the Official Action, the Examiner did not return a copy of Form PTO-1449 that accompanied Applicants' Supplemental Information Disclosure Statement of September 4, 2003. PAIR indicates that this Supplemental Information Disclosure statement was received. Accordingly, attached is a copy of the Supplemental Information Disclosure Statement of September 4, 2003 and the Form PTO-1449 that was attached thereto. Applicants respectfully request the Examiner to return a copy of the Form PTO-1449, initialed to indicate that all the references were considered.

Conclusion

Applicants again appreciate the thorough and detailed Official Action and the citation of Tipton et al. However, Applicants have now shown that Tipton et al. is an inventory management for chemicals, whereas the claimed invention relates to chemical reaction management methods, systems and computer program products. Applicants have also shown that it would not be obvious to provide listings of reagent chemicals that are used to synthesize a target chemical, equipment that is used to synthesize the target chemical and/or a procedure that is used to synthesize the target chemical by reacting the reagent chemicals in the equipment according to the procedure, as recited in the independent claims. Moreover, Applicants have shown that many of the dependent claims are separately patentable. Accordingly, Applicants respectfully request withdrawal of the outstanding rejections and allowance of the pending claims.

Respectfully submitted,



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Susan E. Freedman
Date of Signature: January 21, 2004